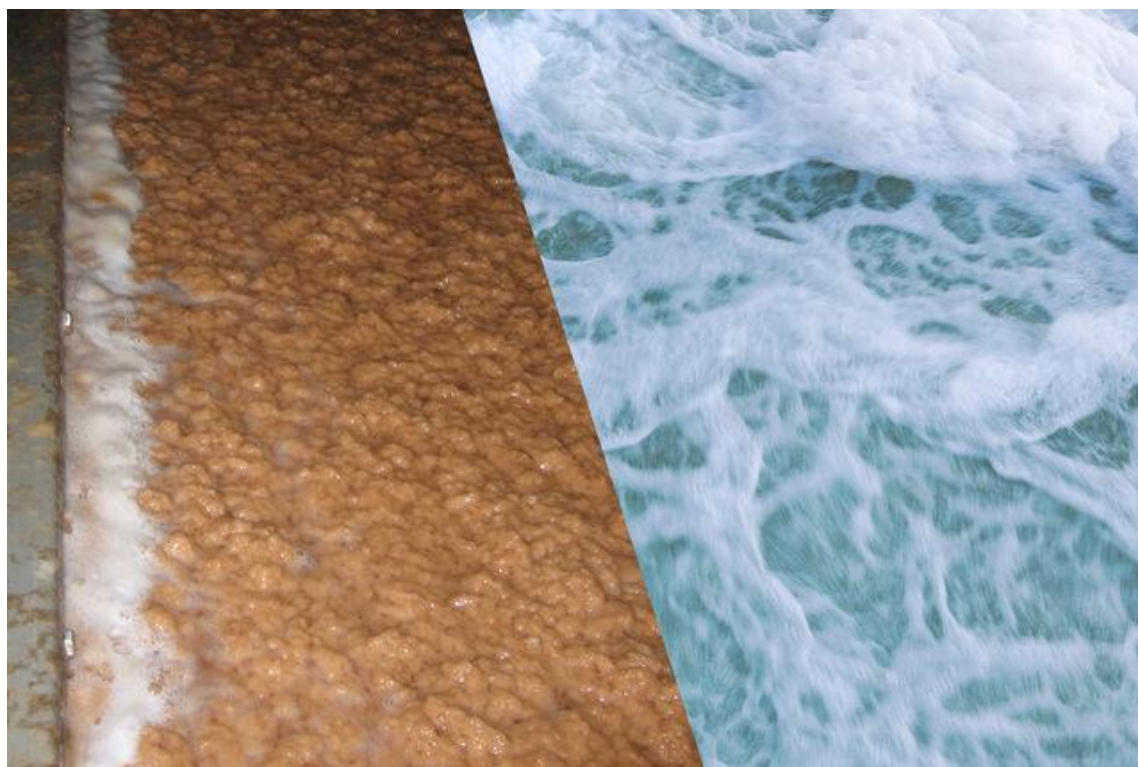


Sludge disposal: less volume, lower costs



The disposal of sludge from wastewater treatment is becoming an increasingly expensive problem for dairies. In many places, the legal framework conditions are also changing. EnviroChemie wastewater treatment plants provide peace of mind when planning disposal, reduce costs and improve the carbon footprint.

Solid matter, fats, water – there is still a significant quantity of sludge left over after wastewater treatment in dairies. Some of it can be used in agriculture as fertiliser and it can also be used in biogas plants or treatment plants to save energy. “However, the prices for disposing of sludge externally have increased significantly in some regions in recent years,” says Ulrich Böhm, Head of the Plant Operation & Service Department at EnviroChemie.

One reason for this is changes in the legal framework conditions, for example, stricter fertiliser regulations in Germany. As a result, it is no longer possible to spread sludge on fields – or at least, only in very small amounts. In addition to this, by 2032, larger treatment plants in Germany will be obliged to recover phosphorus which will increase the costs for dairy sludges which contain phosphorus. Outside Germany, there are often only a few disposal pathways for the sludges produced by the wastewater treatment process, partly because there are fewer biogas plants. “Increasing prices and changes to the legal framework conditions create uncertainty for dairies,” comments Böhm. “They are directed to new disposal pathways or sometimes are no longer able to find a customer for their sludge.”

Minimising the disposal risks

EnviroChemie wastewater treatment plants provide peace of mind for dairies when planning disposal and reduce costs. Dairies are in charge of their own destiny when it comes to reducing their disposal costs: they can significantly reduce the quantity of sludge that eventually has to be disposed of during the wastewater treatment process. “This pays for itself really quickly in regions where the disposal costs are high,” Böhm points out.

However, according to the water experts at EnviroChemie, the use of a standard treatment process is not just an act of expediency: “There is no one perfect solution as the framework conditions and the specific wastewater vary from location to location,” says Robert Lutze who has designed and built wastewater treatment plants throughout the world in his role as process engineer at EnviroChemie. For example, the fat content, the load and the proportion of water vary depending on the production. “We therefore work with the customer to develop an appropriate treatment process in which the process technologies are matched to each other,” states Lutze. “Making the right choices can make an enormous difference.”

For example, a combination of floatation to separate off solids and fats and an aerobic biological treatment process is frequently used in the German milk industry to treat wastewater. “In terms of the treatment performance, this method produces good results,” explains Lutze. “If we add an anaerobic process to the process, this not only increases the energy efficiency of the process but also reduces the quantity of sludge remaining after the wastewater treatment by 50 to 90 per cent.” This is because a greater proportion of the organic load can be removed from the wastewater in anaerobic processes without producing sludge.

Furthermore, this combined process also reduces the carbon footprint of the wastewater treatment. The anaerobic technology also converts the organic load in the wastewater into high-energy biogas which can then be reused as energy. “Keeping the energy within the industrial operation increases overall efficiency,” says Lutze, “and this is becoming more and more important in wastewater treatment.”

Extracting water from the sludge

Water can also be extracted from the residual sludge in a dewatering plant which reduces the remaining quantity for disposal by up to 80 per cent. “By combining various treatment stages with a dewatering process, the final quantity of sludge left at the end is extremely small,” explains Lutze.

If the sludge treatment is supplemented by another anaerobic stage, fermenting the solids, additional energy can be obtained from biogas, and the carbon footprint and residual sludge for disposal can be reduced even further. However, this sludge cannot be reused, for example to obtain biogas, and neither can it be incinerated or dumped. “Therefore, although this costs more to dispose of than untreated and therefore high-energy sludge, the bottom line is that this process is worth it for dairies due to the low disposal volumes,” explains Böhm. In a dairy in Germany, the disposal costs had risen alarmingly. EnviroChemie installed a dewatering plant in addition to the existing plant and the sludge disposal costs dropped by 30 per cent.

Discovering and using hidden potential

EnviroChemie's water experts incorporate sludge treatment directly into their ideas – or they design concepts for existing plants. “And this is where we often find hidden potential,” explains Böhm. EnviroChemie uses EnviCheck to determine what an existing plant may have to offer. “We take a look at the plants and the current systems and can tell relatively quickly whether the plant has been running at optimum efficiency and compare the framework conditions with empirical values from our many years of experience.” So, for example, in a dairy in Germany, it was clear that the plant was not running perfectly and disposal costs were not in line with market values. “The dairy had no idea about this as the costs had remained stable over a long period,” notes Böhm. “We then produced a management concept with additional sludge dewatering which allowed the client to save 40,000 Euros a year.”

This management model covers building the plant and complete operation by EnviroChemie specialists, including maintenance, spare parts, water chemistry and determining the disposal pathway for the sludge is also part of the package. “That would otherwise be a huge financial outlay for the dairies,” says Böhm. “But with our management concept, the customer pays per cubic metre of wastewater and we take care of the complete all-round, zero-hassle package.”

[The ultimate peace of mind when planning sludge disposal.](#)

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